TROPICAL RAINFALL MEASURING MISSION

November 6, 2000 – November 12, 2000
DOY 311 - 317
Day of Mission 1075 - 1081

TRMM MISSION OPERATIONS

- TRMM is flying in the +X Forward direction as of October 27th (00-301) at 18:52:39z.
- Yaw maneuver #49 is scheduled for November 13th (00-318).
- Delta-V #248 is scheduled for November 13th (00-318), using the LBS thrusters.
- The Beta angle range for 00-318 to 00-324 is +3.90° to -26.8°.
- The next Monthly Status Review (MSR) is scheduled for December 6th (00-341).
- The next End of Life Planning meeting is scheduled for November 29th (00-334).
- The next Flight Software CCB meeting is scheduled for December 14th (00-349).
- 50 days remain until Extended Mission science operations begin on January 1st, 2001.

TRMM SUBSYSTEM OPERATIONS

Attitude Control System (ACS)

00-311 (Monday, November 6th)
Delta-V maneuver #245 was successfully conducted at 16:13:18z and 16:59:01z for durations of 28.125 and 19.000 seconds respectively, using the LBS thrusters. The off-modulation of the +Pitch thruster (#2) for burn 1 and 2 was 24.4% and 18.4% (75.6% and 81.6% on time). The remaining fuel is 503.075 kg, and the final apogee and perigee height is 354.84 km x 347.52 km.

00-313 (Wednesday, November 8th)
Delta-V maneuver #246 was successfully conducted at 17:05:20z and 17:51:05z for durations of 34.000 and 19.250 seconds respectively, using the LBS thrusters. The off-modulation of the +Pitch thruster (#2) for burn 1 and 2 was 25.7% and 18.2% (74.3% and 81.8% on time). The remaining fuel is 501.788 kg, and the final apogee and perigee height is 354.91 km x 347.57 km.

00-316 (Saturday, November 11th)
Delta-V maneuver #247 was successfully conducted at 16:10:35z and 16:56:34z for durations of 23.500 and 17.000 seconds respectively, using the LBS thrusters. The off-modulation of the +Pitch thruster (#2) for burn 1 and 2 was 28.7% and 20.6% (71.3% and 79.4% on time). The remaining fuel is 500.815 kg, and the final apogee and perigee height is 354.74 km x 347.43 km.

Flight Data System (FDS)/Command & Data Handling (C&DH)

The UTCF remains at 31535996.835569 seconds. The current drift value is –356 µs. The FS offset is x'7ae' with a current drift rate of –1.399 µs/hr.

Reaction Control Subsystem (RCS)

The RCS subsystem performed nominally during this period. See the ACS section for specific Delta-V information.

Power Subsystem

The Power subsystem performed nominally during this period.

Electrical Subsystem

The Electrical subsystem performed nominally during this period.

Thermal Subsystem

The Thermal subsystem performed nominally during this period.

Deployables Subsystem

The Deployables subsystem performed nominally during this period.

RF/Communications Subsystem

The RF/Communications subsystem performed nominally during this period.

SPACECRAFT INSTRUMENTS

CERES

CERES remains powered OFF, following the original PSIB anomaly on September 16th (00-261).

LIS

The LIS instrument performed nominally during this period.

PR

The PR instrument performed nominally during this period.

The list of Internal Calibration times over Australia in which PR was not radiating is shown below:

2000-311/07:10:10z - 07:12:16z
2000-312/05:58:52z - 06:01:04z
2000-312/22:17:26z - 22:21:35z
2000-313/06:21:32z - 06:23:40z
2000-314/05:10:03z - 05:12:13z
2000-314/21:28:00z - 21:33:05z
2000-315/03:58:39z - 04:00:53z
2000-316/04:21:28z - 04:23:38z
2000-316/20:39:49z - 20:42:39z
2000-317/03:10:03z - 03:12:17z

TMI

The TMI instrument performed nominally during this period.

VIRS

During the previous reporting period, the VIRS calibration door did not open completely (only about 70%) for the 2 solar calibrations performed on 00-298 (Tuesday, October 24th) (AR #84). Two test calibrations were performed on 00-317 (Sunday, November 12th) at 13:22z and 16:25z to better characterize the problem. For these two test cases, the door still did not open entirely (about 90%).

As long as the solar calibration door continues to open about the same distance, solar calibrations will still be valid and no further action will be required. Investigation continues as to what the repercussions would be to science and to the instrument health and safety if the solar calibration door should not return to the closed position following a calibration. Preliminary analysis indicates that the instrument would be safe, and that science data would only be minimally affected in a few of the data channels. The option to open and close the door using the redundant actuator would only be considered if the instrument health and safety or science quality are threatened by the current configuration, since a return to the original actuator would no longer be possible after the switch.

GROUND SYSTEM

- On 00-313, the 17:49z TDW/SA1 event did not acquire at the MOC (ER #215). The FOT confirmed PACORII was receiving data. The IPNOC was scheduled to perform data router maintenance later that day, and the preparation work caused the hang-up at the MOC (TTR #23130). A router reset by IPNOC cleared the problem, and all data was captured on the following 18:27:00z event, which acquired late at 18:29:28z.

- On 00-315, the FEP3 (normally connected to the simulator) would no longer reboot or connect properly to the workstations (ER #216). At first, the problem was not deemed critical, with troubleshooting scheduled to commence the following day. Later that evening, however, a normal reboot of the prime FEP1 was also unsuccessful. This left the control center vulnerable with only one usable FEP for spacecraft command and control. In addition, troubleshooting revealed that a reboot of FEP2 would incur the same result, since FTP connections to FEP2 for file transfers would no longer work, placing the control center in a critical status. The TPOCC System Manager and Hardware Maintenance were called in and spent the night troubleshooting the problem. On 00-316, the problem was confirmed to be related to the new routers (see ER #215), which essentially were no longer dynamically finding the necessary IP addresses. The problem was resolved by hard-coding the proper addresses on the workstations.

- There was a non-acquisition event for TDE/SA2 at 317:00:35:00 - 00:58:00z (ER #217). A Blind Acquisition event was immediately scheduled for TDW/SA2 317:01:35:00 - 02:04:00z, but the previous gap between events was of sufficient duration that all of VR6 (VIRS) science data could not be physically captured before the recorder overflowed. The recorder overflowed for a total of 3 minutes 46 seconds from 00/317 01:53:18z to 00/317 01:57:04z, and no other instrument data was lost. Further investigation tracked the problem to a WSC

software delivery in which the NLIC card had not be re-enabled. NASCOM enabled the card and data flow was restored (TTR #23141).

- There was a non-acquisition event for TDE/SA1 317:02:08:00 - 02:28:00z (ER #218). The FOT extended the next event (on TDW/SA1) in order to ensure complete data capture. The problem was later attributed to a TDE Emergency Time Out (ETO) which was caused by an incorrect directional value used in the Null Search command by the WSC operators following the software delivery reported in ER#217. The WSC Incident Report is included here for reference (TTR #23142):

  On day 317 at approximately 0140Z, the Satcon responsible for TDRS-4 operations commanded the start of a SGL Null search. This was the final carryover action from the Software Delivery 4. Predicated upon the spacecraft position in relation to nodal crossing, a directional value (+ or -) is specified for both N/S (roll) and E/W (pitch) axis. A negative direction was specified for both instead of the correct values of negative in Pitch and positive in Roll. Following the Pitch null being located, SGL Roll movement in the negative direction moved the antenna off the ground station, depriving command capability to and telemetry from TDRS-4. The first of four ETO sequences occurred at 0153Z.

- The NCC Scheduler notified the TRMM Mission Planner that TDS, TDW, and 171 were going to be unavailable from 318-1640 to 2055 due to an STGT software delivery, affecting three TRMM events (TDW 1636-1656, TDW 1815-1835, and TDW 1954-2014) (ER #218). New events were rescheduled on TDE and a patch load was built so that blind acquisitions would not be required. (TDE 1706-171830, TDE 1855-1920). Following the earlier problems at WSC, however, the software delivery to STGT was postponed until the original problem was later found (NLIC card).

Event Reports

ER #215: Router Maintenance resulted in Non-Acq for the TDW/SA1 00/313 17:49:00z event.

ER #216: Router Maintenance resulted in loss of MOC FEP reboot capability.

ER #217: WSC software delivery resulted in Non-Acq and VIRS data loss.

ER #218: TDE ETO resulted in Non-Acq with all data captured on next event.

ER #219: WSC scheduled software delivery required event rescheduling and patch load.

Generic Late Acquisition Reports (for TTRs 19639)

No new Generic Late Acquisition reports were generated during this period.

New Anomalies

No new anomalies occurred during this time period.

Recurring/Open Anomalies

AR #84 00-317 (November 12th, 2000): VIRS Solar Calibration Doors not completely opening. See the VIRS section for details.

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